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ABSTRACT

This study addressed the status quo of instructional software produced by national Saudi Arabian software companies as well as the utilization of commercially produced software at selected 1-12 private schools in Riyadh, Saudi Arabia. Descriptive data from a survey of general managers of four major software producers are reported, as well as from principals of selected private schools. Percentages and frequencies were used for data analysis. Results were as follows: enrichment, computer literacy, and individualized instruction are major uses of instructional software; available software support most elementary and secondary grade levels and subject matters; individual students and private schools are the major target audience for instructional software; formative evaluation is not present in the development process; annual computer exhibits are the major information source about available software; and certain perceived barriers challenge the expansion of computer based instruction in Saudi education. The paper includes recommendations to enhance the status quo of software production and utilization. (Contains 14 references.) (Author/AEF)

Computer Based Instruction in Saudi Education: A Survey of Commercially Produced Software

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Computer Based Instruction in Saudi Education:

A Survey of Commercially Produced Software

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Abstract:

Computer based instruction is gaining wide spread. This study addressed the status quo of instructional software produced by national Saudi software companies as well as utilization of commercially produced software at selected 1-12 private schools in Riyadh. Descriptive data from a survey of general managers of four major software producers (n=4) are reported, as well as from principals of selected private schools (n=26). Percentages and frequencies were used for data analysis. Results were as follows: enrichment, computer literacy and individualized instruction are major patterns of software utilizations; available software support most 1-12 grade levels and subject matters; individual students and private schools are major target audience; formative evaluation is not present in the development process; annual computer exhibits are the major information source about available software; and certain perceived barriers face expansion of computer based instruction in Saudi education. Recommendations to enhance the status quo of software production and utilization are included.

Introduction:

Investment in information technology for instructional purposes is a hot topic. Schools every where have felt the need to respond to pressures imposed upon them by the informative revolution and related advances in computer technology in order to better prepare young generations to live in an ever changing society. Such movement is inspired by high expectations of the role that information technology can play in educational reform. Saudi Arabian educational system is not an exception. The general policy of education in the Kingdom of Saudi Arabia has emphasized the importance of integrating computer technology into education. Results of a recent study (Al-Fantuk & Al-Sultan, 1999) revealed that more than 70% of teachers and students in the study supported the use of computer in the classroom and that number of computer sets in secondary schools has jumped from 5336 sets in 1992 to 24045

sets in 1998, thus, decreasing the ratio of students to computer sets in these schools from one computer set for each 24.7 students in 1992 to one computer set for each 12.4 students in 1998. Currently three computer courses (one course a year – 2 classes a week) are required of all students at grades 10-12 in Saudi Arabia. In public schools computer training is currently offered by Future Kids Company, along with training offered by the Ministry of Education.

To catch up with the growing demand for instructional software in the Kingdom, four national software companies are currently leading software production and marketing.

These are: *

Sakhr Software (SS), one of Al-Alamiah Group, which was established in 1975, is a pioneer in software production. Since the early eighties, (SS) has marketed more than two million programs for Arab consumers. (SS) produces its products in Egypt for technical and economic reasons.

Dowlog Technologies (DT) was established in 1992 in Riyadh, and is specialized in producing K-12 curricula software. It is the only Saudi software company that produces its products locally in the Kingdom.

Al-Mareefa Al-Saudia Company (AAC) was established in Riyadh in 1996 as an agent of Knowldogy International Group in the USA. It produces its products of K-12 curriculum in Egypt.

Obeikan Home Interactive (OHI) was only recently established in 1998 in Riyadh. It is involved in Arabization of foreign software produced by such international producers as Knowledge Adventure, Scholastic, and Discovery in the USA and Iona Software in Ireland.

Statement of the Problem: The study investigated the status quo of commercially produced software by Saudi national companies as well as certain aspects of the application of this software at selected private schools.

Purpose of the study: The major purpose of the study was to shed light on certain aspects of instructional software produced and marketed by national companies as

* For more information about Saudi Software companies, you can visit their web sites shown below:

- SS : WWW.sakhr.com
- DT : WWW.dowlog.com
- AAC: WWW.mareefa.com
- OHI: WWW.homeinteractive.com; WWW.arabiclibrary.com

well as to describe certain aspects related to the utilization of this software at selected private schools.

Research Questions: Two major questions were addressed in the study. They were as follows:

1. What is the status quo of instructional software produced and marketed by Saudi national companies in relation to the following aspects:
 - a) Types of software applications
 - b) grade levels and subject matters targeted by local companies;
 - c) target audience;
 - d) patterns of software utilization;
 - e) methods of developing software;
 - and f) perceived barriers facing expansion of software applications in Saudi education.
2. What is the status quo of instructional software utilization by selected private schools in terms of:
 - a) patterns of utilization;
 - b) grade levels with which software is most utilized;
 - c) the extent to which available software meet curricula goals;
 - d) sources of software used in the schools;
 - e) information sources about available software;
 - f) methods used for evaluating software utilization;
 - and g) degree of teachers and students' satisfaction about the usefulness of software utilization.

Method: The survey method was applied. Two questionnaires were designed to collect data related to the study questions. One questionnaire was addressed to the general managers of four major national software production companies. The researchers met the general manager of each company, explained the purpose of the study, and handed the questionnaire. All four questionnaires were returned (return rate = 100%, n=4). The other questionnaire was addressed to 36 principals of private schools; (12 elementary, 12 intermediate, and 12 secondary schools, of which 50% boys schools and 50% girls schools), 26 questionnaires were returned (return rate = 72%, n=36). All the companies and schools are located in the capital city of Riyadh and have been deliberately selected for two reasons. First, these companies are currently the major instructional software producers and marketers in the Kingdom. Second, private schools in Saudi Arabia are major client of instructional software market, hence, expected to be active users of such software.

Importance of the study: This is the first study that addressed its concerns directly to the managers of software companies in Saudi Arabia through questionnaire. As such, it is considered a preliminary study that might shed light on important issues related to computer based instruction, in Saudi Arabia.

Literature Review: Literature review indicates that no study has been carried out regarding local producers of instructional software in Saudi Arabia. However, there exists few master thesis and other studies that addressed software utilization in schools. Al-Fantuk and Al-Sultan (1999) survey of 120 teachers and 580 secondary schools students revealed that more than 70% of teachers and students support the use of computer in the classroom; that computer acquisition in the Kingdom is the highest in the region, where 40% of teachers and 37.4% of students in the study own computer sets; that computer sets has increased in public secondary schools to hit the number of 24045 in 1998, thus decreasing the ratio of students to computer sets to one computer set for each 12.4 students in that year; and that only 30% of teachers were not in favor for the use of computer in the school because of language barrier, information illiteracy, perceived increase in teaching workload, and need to learn new teaching methods. Al Hazmi (1995) evaluated mathematics software utilized at teachers' college in Riyadh. Results showed that computer software were more effective than programmed texts and that students' attitudes toward computer based instruction were more positive than traditional instruction. Al-Jeraywai (1999) studied the effects of multimedia on the achievement of tenth graders in mathematics, but found no significant differences between achievement of students in experimental and control groups. Al-Mutairi (1998) investigated the effects of computer software on the achievement of sixth graders in general science; a significant difference (.05) was found in favor of software treatment at the first and second levels of Bloom cognitive taxonomy (knowledge and comprehension), but found no significant difference at the application level of that taxonomy. Al Omar (1999) found no significant differences between achievement of six grade math students in the data show treatment and that of students in the traditional group. Similarly, Al-Lohaib (1999) found no significant differences between achievements of tenth grade physic students in the computer-based treatment and that of those in the traditional group. Finally, Qwaifel (1992) evaluated available software used in teaching Arabic Grammar and general sciences in Jordan; he reported that these programs were consistent with only 48% of design criteria and 53% of subject matter experts' criteria; he also reported positive students' attitudes toward the benefits, ease of use, and enjoyment, of instructional software.

Results and Discussion:

Types of Software applications produced by Saudi Software Companies:

The major software applications produced by each of the four Saudi Software companies is presented in table 1*.

Company	Software Applications
Sakar Software (SS)	Family Software, Educational Software, Corporate Software, Islamic Software, Internet Software, School Management Software.
Dowlog Technologies (DT)	School Curricula Software, Financial Software, Consulting Software, Training Software.
Al-Mareefa Al-Saudia Co. (AAC)	School Curricula Software, Management Software, Family Software
Obeikan Home Interactive (OHI)	Children Learning Software, Educational Games, Educational Software.

Table 1. Major Types of Software applications produced by Saudi Companies

Two companies, (DT) and (AAC) produce software that matches the content of Saudi general education curricula, while the other two (SS & OHI) produce software that is of supportive nature of school curricula. Also, (SS) is the major producer of school management systems (e.g. registration & transcripts, personnel affairs, school inventory, etc.). Currently, (OHI) is only involved in Arbnization and adaptation of foreign products via contracts with international companies.

Grade Levels Targeted by Saudi Software Companies:

Instructional software produced by (DT) and (AAC) are intended specifically to match Saudi curricula at grades 1-12, while (SS) produces software to support grades 10-12, and (OHI) markets Arbnized software that support grades K-9.

Target Audience:

Private schools as well as individual students represent the major client of commercially produced software in Saudi Arabia. Individual students buyers utilize Software at home. Private schools are profit driven; students pay fees for enrollment. Thus, in order to compete for more enrollment, these schools provide additional programs that are not offered by public schools, among which is computer literacy programs.

*

For more information about these applications, please check web sites shown on page no. 3.

Subject Matters Targeted by Commercially Produced Software:

All four surveyed companies seem to concentrate on producing multimedia CD ROM's in science studies, Math and English Language. Only (OHI) markets social studies software and only (SS) produces Islamic Software, while (OHI) and (AAC) market software in Arabic Subject Matters.

Patterns of Software Utilization:

Commercially produced instructional software in Saudi Arabia falls into three major patterns of utilization; namely, enrichment, computer literacy and total teaching. (DT) and (AAC) are heavily involved in producing software that cover exact content of grades 1-12 curricula, hence, intended for total teaching of subject matter; however, no company reported total teaching usage of their software. (SS) and (OHI) are more involved in producing educational software for enrichment purposes. In addition, individualized instruction is a major goal of produced software. (AAC) produces CDI, a television multimedia software that is intended to serve individual as well as group based, teacher-led instruction. This latter computer application is gaining wide popularity among private schools. Table 2. summarizes answers to the above issues raised by the first research question.

Method of Developing Software:

Data shows that software is developed cooperatively between software designers and subject matter experts. In terms of evaluation method and criteria, data indicates, that all four companies subject their products for internal evaluation by their own designers. Further, for all these companies, authority evaluation, is considered a major evaluation criteria. Finished and ready for marketing products are subjected for evaluation by Saudi authority of general education. Although external, this type of evaluation is some kind of official endorsement about the appropriateness of software for Saudi educational system. Such endorsement is used by these companies to promote their products, hence, increasing their sale. The companies did not mention pilot testing the software with sample of target audience during the stage of development (formative evaluation), nor did they mention measurement of students attitudes toward benefits of their software. However, there exists some master thesis's that compared the effectiveness of some software against traditional instruction. In brief, when asked about the purpose of evaluation, all companies agreed on the purpose of persuading target users about the benefits of their products which will eventually leads to increased marketing.

Company	Grade level	Subject Matters	Patterns of Utilization	Target Audience
Sakhar Software	10-12	<ul style="list-style-type: none"> Science English Math Islamic Studies 	<ul style="list-style-type: none"> Enrichment Individualized Instruction 	<ul style="list-style-type: none"> Public and Private Schools Individual Students
Dowlog Technologies	1-12	<ul style="list-style-type: none"> General Science Math Physics, Chemistry Geography English Language 	<ul style="list-style-type: none"> Total learning / teaching Individualized instruction 	<ul style="list-style-type: none"> Private Schools Individual Students
Al-Mareefa Al-Saudia Co.	1-12	<ul style="list-style-type: none"> General Science Math Physics, Chemistry Geography Arabic Language 	<ul style="list-style-type: none"> Total learning / teaching Individualized Instruction Group instruction 	<ul style="list-style-type: none"> Private Schools Individual Students
Obeikan Home Interactive	K-9	<ul style="list-style-type: none"> General Science Math Biology Social Studies Geology English Language Arabic Language 	<ul style="list-style-type: none"> Enrichment Individualized Instruction 	<ul style="list-style-type: none"> Private Schools Individual Students

Table 2. Grade levels, subject matters, patterns of utilization and target audience of instructional software produced by Saudi companies.

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Major Barriers Facing Expansion of Software Application:

The four general managers of companies surveyed, perceived certain barriers as the most important ones facing expansion of software application in Saudi education. However, they differ as to the far most important one. The far most important barrier perceived by each company were as follows:

(SS) : Continuous change in national curriculum.

(DTC): Lack of awareness about the usefulness of instructional software on the part of students and teachers;

(AAC): Lack of Adequate training on the part of teachers.

(OHI) : Lack of appropriate computer hardware in schools.

Table 3. lists the major barriers perceived by the surveyed companies ranked according to importance.

Barriers
1. Continuous change in national curriculum
2. Lack of awareness on the part of students and teachers toward the usefulness of instructional software.
3. Inadequate administrative support.
4. Lack of adequate teachers training.
5. Lack of appropriate computer hardware in schools
6. Students and teachers' perceptions of instructional software as entertainment programs.
7. Inadequate school financial resources to acquire instructional software.
8. Cost of producing instructional software
9. Illegal copying of instructional software
10. Slow administrative procedures by target schools and or educational administration.

Table 3. Perceived barriers facing expansion of software utilization in Saudi general education.

From table 3, it is worth indicating that barriers 4,5 & 7, and 3 &10, are consistent with Ely' conditions (1990) of "Knowledge and Skills", "Resources", and "Commitment" respectively, that facilitate use of innovations.



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